ADI LEAK DETECTION

LEAK DETECTION GUIDE

Why a newly tanked basement can still develop wet patches after rain

The short answer

Tanking slurry and cementitious membranes block liquid water, but they don't seal against water vapour driven through the substrate under hydrostatic pressure. When heavy rain raises the water table sharply, that pressure finds any weakness in the membrane system and moisture crosses into the basement. The wet patches appearing after rain aren't proof that the tanking was poorly applied — they're proof that the membrane system has at least one point where pressure exceeds resistance.

What causes it

Hydrostatic pressure is the force water exerts against a structure when the surrounding ground becomes saturated. A tanked basement sits below ground level, so saturated soil presses against the external face of the walls and floor slab from every direction. Tanking slurry is rigid once cured. Rigid materials develop hairline cracks when the structure moves, even fractionally, and those cracks open pathways for pressurised moisture.

Four distinct failure points account for most post-tanking damp:

- Hairline cracks in the render coat, invisible to the eye, allow pressurised water to track through the substrate and reach the membrane from behind
- Voids left between the wall surface and the membrane because the substrate wasn't adequately prepared — moisture collects in those voids and migrates inward
- The wall-floor junction, where two separate tanked surfaces meet, is a structural weak point; inadequate drainage channels at that junction allow water to pool and build pressure
- Pipe penetrations through the membrane — waste pipes, service entries, and drainage outlets — require purpose-made collars to maintain the seal; a collar that wasn't fitted correctly or that has shifted creates a direct entry point

Rain is the trigger because it raises the water table fast. The pressure spike happens within hours of sustained rainfall, which is why patches appear during or shortly after a downpour rather than during dry periods. The membrane may perform adequately at low water-table levels and only fail once that pressure threshold is exceeded.

Vapour transmission adds a second mechanism. Even where liquid water cannot pass, water vapour under pressure migrates through concrete and block at a molecular level. Tanking slurry reduces vapour transmission but doesn't eliminate it entirely, particularly where the membrane coat is thinner than specified or was applied to a damp substrate.

How ADI finds it

ADI Leak Detection uses thermal imaging cameras as the starting point for a tanked basement survey. Moisture moving through or behind a wall surface produces a temperature differential that thermal imaging captures as a distinct pattern. Patches that are actively wet show a cooler signature against the ambient wall temperature; the camera maps those differentials across the full basement envelope rather than just the visible damp spots.

Moisture mapping follows the thermal survey. ADI uses calibrated protimeter moisture meters and radio-frequency moisture probes to take readings at grid intervals across the walls and floor slab. Those readings produce a spatial map of moisture concentration — distinguishing between surface condensation, active ingress, and residual dampness from an earlier event. The map identifies whether moisture is travelling down from a high point, tracking laterally from a specific wall, or rising from the floor-wall junction.

Where the thermal and moisture data point to a suspected void or disbonded membrane, ADI uses borescope inspection to view the cavity without opening the wall. A small-diameter probe inserted through a drill point confirms whether a void is present and whether water is pooling behind the membrane.

Pipe penetrations receive individual attention. A surveyor examines each service entry point with a close-focus endoscope camera and takes moisture readings directly around the collar. A failed collar produces a localised moisture spike that stands out clearly against the surrounding readings.

ADI Leak Detection combines thermal imaging with detailed moisture mapping to distinguish active ingress from residual dampness — a distinction that determines whether the membrane needs localised repair or full reinstatement. The full survey typically runs four to six hours, giving surveyors sufficient time to assess the basement envelope under resting conditions and, where timing allows, to correlate readings with water table data.

What to do next

Before the survey, note when the wet patches appear in relation to rainfall — hours after, during prolonged wet weather, or only after heavy downpours. That timing information helps the surveyor identify which failure mechanism is most likely driving ingress.

Keep the basement unheated and unventilated in the days before the survey where safe to do so. Mechanical drying or high ventilation can temporarily reduce surface moisture readings and make it harder to locate the source accurately.

Avoid applying any new sealant or coating over the patches before the survey. Surface treatments applied over active moisture trap water behind them and alter the thermal signature, which reduces the accuracy of thermal imaging.

Once the survey report is complete, share it with the contractor who carried out the original tanking. The report identifies the specific failure points and the mechanism behind them, which gives the contractor the information needed to carry out targeted remediation rather than a full strip-out.